

Patent Application of
Georg A. Austin
for

Title: Electrically Heated Mineral or Masonry Material Seat

Cross-Reference to related applications

Not applicable.

Background--Field of Invention

This invention is related to the heating of stone or composite material by means of a electrical element to enhance the comfort of a seated user.

Background--Description of Prior Art

Electrically heated seating to provide additional comfort to a seated user as well as the concept of heating concrete to keep snow and ice off driveways, etc. are both recognized inventions. Heated stadium seat, U.S. Patent 6,220,659 to McDowell (2001) discloses an electrical application for a heated seat suitable for outdoor use. U.S. Patent number 5237155 assigned to Hill,(1993), shows an electrical heating device encased in polymer cement and a method of making same. A Pre-cast Heating panel, U.S. Patent 4,564,745 to Deschenes (1986), describes a heating panel embedded in fiber-reinforced mortar. Also noteworthy is U.S. Patent 6,614,992 by Schmitt, (2003) which demonstrates a heating platform formed by boards or planks and containing an electric heating cable. McCarthy, (1980) uses a body of concrete with a heating element to provide a warmed resting place for reptiles in U.S. Patent 4,234,780.

Summary

In accordance with the present invention an electrically heated mineral or composite material seat comprises a seating device with upright supports and contains an electrical heating element to provide said user enhanced comfort in colder temperatures.

Objects and Advantages

The object of my invention combines the concepts of electrical heating and stone or

composite material in the form of a bench that will provide added comfort to the seated user. While the seat melts snow and ice, the intent of my invention is to primarily allow increased heat and comfort to the user in colder climates or lower temperatures.

Drawing Figures

Fig. 1 is a perspective view of front and backside of the assembled bench without electricity.

Fig. 2 is an exploded view of the stone furniture as indicated in Fig. 1.

Fig. 3 is a side view of the bench seat and back showing the notched joints

Fig. 4 is a view looking down on the upright supports and both the front and back cover panels.

Fig. 5 is a perspective view of a rock slab that contains a heating cable.

Fig. 6 is a perspective view of back bench panel with heating cable installed.

Fig. 7 is a cross section view of the heating element inlaid in the seat.

Reference Numerals in Drawings

21	seat back	23	seat bottom
25	rear cover panel	27	front cover panel
29	right upright support	31	left upright support
33	heating element	35	concrete or epoxy filler
37	power cord	39	junction box
41	insulating sheet cover		

Description of Invention

A preferred embodiment of the heated stone slab bench is illustrated in **Figs. 1 and 2** as a basic version of my invention, a seating device made of stone or masonry composite that can be made to any width, height or length, and have varying weight or color of stone or concrete. The bench includes a seat bottom **23** that is laid on two evenly spaced upright supports **29** and **31** of desired height. The stone chair can include a seat

back **21** that is notched at the base to fit securely into the seat bottom **23**. A front cover panel **27** and a rear cover panel **25** hide the electrical element **33**, adding stability to the upright supports **29** and **31** and the seat back and bottom **21** and **23**.

Fig. 3 shows a side view of the notched joints that add stability to the assembled bench back and bottom **21** and **23** while **Fig. 4** clarifies the placement and perspective of the legs **29** and **31**.

Fig. 5 demonstrates the heating element **33** embedded in the bench back and bottom **21** and **23**. Accordingly, the heating means comprises a self-regulating cable **33** such as commercially-sold Technitrac 15PMI-Parallel self-regulating heater 15 W/Ft (49w/m) G 10 degrees C. 120 V. (FM) max. temperature 185 degrees C. max amps 32 temperature code T3 053390 0036 Ft) is inlaid in the rock slabs **21** and **23** in either a spiral or wave pattern (side to side) with the distance of the cable **33** to be inlaid between 1 and 5 inches apart, depending on the desired maximum temperature.

Fig. 6 shows the rear view of the bench back **21** with embedded electrical element **33**. Two heat cables **33** are connected at the junction box **39** to the power cord **37**. Wire connections are made in the commercially-purchased junction box **39** and contain a commercially-acquired thermostat with probe, (not shown) . The probe is located outside the junction box **39** and extends to the bottom rock slab **23**. A powercord **37** must be used with a commercially-acquired ground fault interrupter (not shown) as governed by U.S. electrical safety standards. Steel pins, bolts and or tie wire (not shown) hold the junction box **39** in place securely.

Fig. 7 depicts a cross section view of the heating element **33** inlaid in seat back and bottoms **21** and **23** after the rock slabs **21** and **23** have been hollowed to receive the electrical cable **33**. An insulating sheet cover **41** such as a commercially-sold space blanket in a four layer thickness is placed on heating cable **33** in said slabs **21** and **23**. Steel pins, (not shown) that secure the heating element **33** in hollowed rock casings **21** and **23** are pressed into insulating sheet **41**. Spiral heating element **33** is sealed in bench parts **21** and **23** with mortar or adhesive epoxy material **35**.

Operation

Hollowing slabs and drilling holes--The manner of building a heated stone or conglomerate material bench requires two stone slabs **21** and **23** to be hollowed to an approximate 2 inch depth for a 4 inch thickness of rock. Two holes are drilled into each leg

29 and 31 as shown in Fig. 2. to attach front and rear cover 25 and 27 with bolts (not shown). Two holes are drilled into either side of front and rear covers 25 and 27 to receive legs 29 and 31 by use of bolts. An approximate three inch deep hole is drilled in underside of bottom slab 23 above where junction box 39 will be mounted. This hole will be used to mount probe (not shown) when connections are made.

Placement of the heating element 33 in hollowed out slabs 21 and 23 can be made in a spiral or wave pattern. The spiral pattern allows for the most cable per square inch, higher temperatures and is the preferred method. Steel pins are placed approximately one to two inches apart to keep cable 33 evenly spaced in said slabs 21 and 23.

An insulating sheet cover 41 such as a commercially-sold space blanket in a four layer thickness is placed on heating cable 33 in said slabs 21 and 23. Steel pins, (not shown) that secure the heating element 33 in hollowed rock casings 21 and 23 are pressed into insulating sheet 41. Spiral heating element 33 is sealed in bench parts 21 and 23 with mortar or adhesive epoxy material 35. The mortared or epoxied areas of seating panels 21 and 23 receive color to match the stone color by use of latex additive, cement and stone dust (not shown).

To assemble bench, place legs 29 and 31 at equal distances to fit the length of slabs 21 and 23. The narrow portion of the legs 29 and 31 are pointing upwards to support back of seat 21. Place bench bottom 23 on legs 29 and 31, with notched edge facing upwards and toward back of legs 29 and 31. Seat back 21 is set into place with notched edge facing mirrored notched edge of bottom seat 23, with back 21 resting against upright portion of legs 29 and 31.

Wire connections—Two heat cables 33 are connected at the junction box 39 to the power cord 37. Wire connections are made in the commercially-purchased junction box 39 and contain a commercially-acquired thermostat with probe, (not shown). The probe is located outside and above the junction box 39 and extends to the bottom rock slab 23 where previous hole was drilled. A powercord 37 must be used with a commercially-acquired ground fault interrupter (not shown) as governed by U.S. electrical safety standards. Each hollowed out slab 21 and 23 contain approximately 35 feet of heating cable 33 that is placed around 1.5 inches apart, depending on desired degree of heat. Steel pins, bolts and or tie wire (not shown) hold the junction box 39 in place securely.

To make the connections at the junction box a positive wire in each heating element **33** in back and bottom bench **21** and **23** are attached to positive wire on power cord **37**. Negative wires in elements **33** attach to negative wire on power cord **37**. Ground wires from electrical elements **33** are attached to ground wire on power source **37**.

Final Installation--To install front and rear cover panels **25** and **27** to upright supports **31** and **29**, use bolts that fit the size of previously drilled hole. Additional holes can be drilled and bolts added for greater stabilization of bench. Plug power cord **37** into regulation ground fault interrupter outlet.

Conclusion, Ramifications and Scope of Invention

This indoor/outdoor heated stone or concrete bench contains a heating cable embedded in its back and seat portions to provide enhanced comfortability while seated thereon in colder environments and temperatures. While my description contains many specificities, these should not be construed as limiting the scope of the invention but as merely providing illustrations of some of the presently preferred embodiments of this bench. For example; the stone benches can have heated arms, or may be packaged in the form of a heated stone stool top with wooden or metal legs or a low to the ground stone heated platforms that can be used for warming feet.